REMARKS

In the office action mailed April 7, 2003, the proposed drawing corrections have been approved. Submitted with this response are formal documents as requested.

Also in the office action mailed April 7, 2003, claims 1, 5, 7 - 10, 14 and 16 - 19 were rejected under 35 U.S.C. §102(a) over Herzinger (EP 0,905,879), which is in German. This reference appears to correspond to German Patent DE 197434207, an English translation of which was filed in connection with this application via facsimile on December 5, 2002.[1] Claims 2, 3, 11, 12 and 20 were also rejected under §103(a) over Herzinger in view of U.S. Patent No. 5,130,670 (to Jaffe).

As discussed during the telephone interview, the Herzinger reference also discloses a transmitter circuit for generating a high frequency transmission signal, which is also disclosed to be used in at least two frequency bands (GSM and DC1900). The circuit shown in Figure 2 of Herzinger also includes a phase comparator function and two frequency dividers.

The operation of the circuit of Figure 2 of Herzinger, however, is quite different than applicant's. Herzinger discloses that the frequency plan is changed (e.g., from GSM to DC1900) by varying the values of N and R of the frequency dividers. The circuit shown in Figure 2 of Herzinger requires that either the values of the frequency dividers be varied and/or the frequency of the local oscillator (LO) by varied, which will change the frequency of the output to provide a circuit with a different frequency plan. In particular, Herzinger states:

1 As noted by the Applicant's representative during the telephone interview, the equation that appears in the right side column of page 2 of the English translation of Herzinger at about line 3 should read "fVCO=fLO(R-N):R" instead of "fVCC=fLO(R-N):R".

> The use of two dividers FT1 and FT2 with divider values of N and R, which may be different or the same, provides a high degree of freedom in determining the frequency plan.

Herzinger translation, left column, page 5, lines 8 - 12.

The teaching of Herzinger, therefore, is that the values of the frequency dividers may be independently varied to any value to achieve any desired frequency plan. For all values, however, fVCO=fLO (R-N):R or $F_{LO}=F_{OUT}/(1-n/r)$.

As further discussed during the telephone interview, applicant's invention is directed to a specific relationship between the values of the frequency dividers and the two frequency plans at which the circuit may operate as follows:

> For GSM, therefore, $RF_{LO} / n = (RF_{LO} - RF_{OUT}) / m$, where $RF_{LO} - RF_{OUT}$ is the high side difference product. Solving for RF_{OUT}, $RF_{OUT} = RF_{LO} (1 - m/n)$ which provides that $RF_{LO} = RF_{OUT} / (1 - m/n)$. For DCS, $RF_{LO} / n = (RF_{OUT} - RF_{LO}) / m$, where $RF_{OUT} - RF_{LO}$ is the low side difference product. Solving for RF_{OUT}, $RF_{OUT} = RF_{LO} (1 + m/n)$ or $RF_{LO} = RF_{OUT} / (1 + m/n)$. The values of m and n may be chosen such that the transmitter output signal may be at 900 MHz for GSM, and may be at 1800 MHz for DCS. This may be achieved by recognizing that $RF_{OUT} = RF_{LO} + RF_{IF}$ for DCS and $RF_{OUT} = RF_{LO} - RF_{IF}$ for GSM where RF_{IF} is the frequency of the intermediate frequency signal, which is the feedback signal to the quadrature modulator.

Application, page 6, lines 11 - 19 (emphasis added).

Applicant has developed a circuit therefore, in which the frequency plan may be changed (e.g., from GSM to DCS) by choosing either $F_{LO}=F_{OUT}/(1-n/r)$ or $F_{LO}=F_{OUT}/(1+n/r)$. This avoids having to vary the values of the frequency dividers, and is not taught or suggested in the Herzinger reference. By teaching that the values of the frequency dividers should be adjusted the Herziger reference actually teaches away from the invention as claimed by the

applicant, which is made more clear by the present amendment that clearly separates the $F_{LO}=F_{OUT}/(1+n/r)$ from the $F_{LO}=F_{OUT}/(1-n/r)$ in each of the independent claims. The applicant's invention requires a specific relationship between the values of the frequency dividers and the frequency plans for the two modes of operation. The Herzinger reference simply discloses that n and r may be varied to achieve a variety of frequencies wherein $F_{LO}=F_{OUT}/(1-n/r)$.

The Jaffe reference discloses a phase locked loop circuit for a swept synthesized source in which hysteresis, tuning nonlinearlity, and drift over time and temperature of an oscillator are disclosed to be compensated. As noted in the office action, the phase locked loop of the Jaffe reference includes a fractional n synthesizer. The Jaffe reference, however, does not disclose a translation loop modulator having two modes of operation, and further provides no teaching or suggestion that would have led one of ordinary skill in the art at the time of the invention to modify the disclosure of the Herzinger reference to achieve the subject of the applicant's invention as claimed.

As claimed in each of amended independent claims 1, 10 and 19, therefore, the circuit is clearly for use in a communication system having a first mode of operation at a first frequency and a second mode of operation at a second frequency, and $F_{LO}=F_{OUT}/(1+n/r)$ in said first mode of operation, and $F_{LO}=F_{OUT}/(1-n/r)$ in said second mode of operation. Dependent claims 2 - 9, 11 - 18 and 20, as well as new claims 21 and 22 depend from the above independent claims further limit the subject matter of the respective independent base claims.

Each of claims 1 - 22, therefore, is in condition for allowance. Favorable action consistent with the above is respectfully requested.

Respectfully submitted,

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